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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,455	01/24/2002	Frank Fischer	10191/2162	9707

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EXAMINER

CULBERT, ROBERTS P

ART UNIT PAPER NUMBER

1763

DATE MAILED: 01/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)	
10/057,455	FISCHER ET AL.	
Examiner	Art Unit	
Roberts Culbert	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 6, 7 and 9 is/are rejected.
- 7) ☒ Claim(s) 3-5 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- ☐ Interview Summary (PTO-413) Paper No(s). _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 6, 7 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "forming the protective layer over a nucleation layer over the entire surface." It is not clear what the entire surface is since this term could mean the entire substrate, the frontside of the substrate, or the first hard-surface mask. It is not clear if the phrase "over the entire surface" modifies the term "nucleation layer" or the term "protective layer".

Claim 7 recites the limitation "forming a second hard-surface mask". It is not clear if there is a first hard-surface mask, since none is recited in claim 1. It is not clear if claim 5 is intended to depend from claim 5 for example, which recites a limitation of forming a first hard-surface mask.

Claim 9 recites the limitation "forming the second hard surface mask from the protective layer on the backside". It is not clear how the second hard surface mask is formed from the protective layer since there is no protective layer on the backside in claims 1 and 7. It is not clear if the second hard surface mask is formed from the protective layer material or if the protective layer is the same layer as the second hard surface mask.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent in view of U.S. Patent.

Referring to Figures 1-3, Offenberg teaches a method of forming a MEMS structure comprising: providing a substrate (1) having a front side and a back side, patterning the front side of the substrate (Figure 3), at least partially covering the front side of the substrate (Figure 1) with a protective layer (S), patterning the back side of the substrate (Figure 2), and at least partially removing the protective layer from the patterned front side of the substrate (Col. 3, Lines 39-48). Offenberg also teaches the formation of a hard surface mask on the backside of the substrate and etching a cavern into the backside when the front side is covered at least partially by the protective layer. (Figure 2) Furthermore, Offenberg teaches that the substrate has a wafer substrate (1), a first sacrificial layer (2, 4) situated on the wafer substrate and a micromechanical function layer (6) situated on the first sacrificial layer, the micromechanical function layer forming the front side and the wafer substrate forming the backside. See (Col. 4, Lines 3-7).

Offenberg does not teach that the protective layer contains germanium.

Clark teaches that Germanium release masks are suitable for temporary protection of MEMS structures during the fabrication process. (Col. 7, Lines 64-67) Clark teaches that the Germanium protective layer may be deposited using a nucleation layer. (Col. 7, Lines 5-15)

It would have been obvious to one of ordinary skill in the art at the time of invention to use a protective layer containing germanium as the protective layer in the MEMS fabrication process described by Offenberg in order to suitably protect sensitive frontside MEMS elements during backside processing.

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One of ordinary skill in the art would have been motivated to use the germanium protective layer of Clark since Clark teaches that the Germanium protective layer is suitable for protecting MEMS structures, and provides numerous advantages. See (Col. 3, Lines 37-67) for example.

Allowable Subject Matter

Claims 3-5 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 9 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

R. Culbert

